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APPLICATION NO	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/068,005	02/08/2002	Hyo-Sang Jung	262/011	6445

7590 06/15/2004

The Law Offices of Eugene M Lee, PLLC
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Arlington, VA 22209

EXAMINER	
PADGETT, MARIANNE L	

ART UNIT	PAPER NUMBER
1762	

DATE MAILED: 06/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

CF

Office Action Summary	Application No.	Applicant(s)	
	10/068,005	JUNG, HYO-SANG	
	Examiner	Art Unit	
	Marianne L. Padgett	1762	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *20 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *8-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *8-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

1. Applicant's amendments have corrected the clarify problems discussed in the previous action (paper #7, mailed 10/23/03), and removed Beck et al (3,960,605) as a 102/103 reference, since the particular procedure as now claimed, for opening up and closing the ion source, when it undergoes maintenance or repair, is not discussed therein. The secondary references of Carpenter et al (6,559,462 B1) or Yang et al (5,880,013) which discuss flushing techniques with gases inactive or inert to the systems being treated, are employed between implantations for cleaning purposes, but not as now claimed. Carpenter et al flushes the sources with N_2, but does not open the system or let up to atmospheric pressure. Yang et al, vents the implantation chamber to atmospheric pressure, preferably using inert gas (Ar) or N_2, between wafer cleaning and implantation, noting the advantage of diluting contaminates before then evacuating, but they are only so treating the substrate treatment chamber, not the ion source.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bunker (5,898,178).

In the background (col.1, lines 10-18; col.2, lines 13-20), abstract and col.6, lines 35-40, Bunker discusses the need for maintenance of ion implantation equipment, such as the frequent need to replace the filament cathode, used in ion implantation for species that react with air, such as phosphorous. On col.2, lines 43-53, conventional means for opening ion sources for such

maintenance is mentioned, specifically that the vacuum systems therefore are raised to atmospheric pressure or pumped to vacuum from atmosphere, and that inert gas may be employed in these procedures, which also have the vacuum systems to reaching equilibrium. While Bunker is not using such procedures due to safety considerations concerning the radioactive dopant species intended to be used in his apparatus, this discussion demonstrates that the concepts or general procedures embodied by applicant's claims are old and well known. Bunker's background disclosure differs from the claims, by not giving a detailed step-by-step procedure of exactly when and where inert gas is injected, pressure is equalized and evacuation occurs with respect to opening and closing, however it would have been obvious to one of ordinary skill in the vacuum art and a matter routine operating procedure to extrapolate a sequence a sequence of steps from this background disclosure that would accomplished the actions described therein. For example, inorder for inert gas to be employed in either rising to atmospheric or pumping down, the inert gas must be input before such procedures start. Stating that a wind exists in the vacuum system until equilibrium pressure is reached, indicates that to perform the procedures, such equilibrium is reached, by implication for either raising or lowering the pressure. While various gas and vacuum lines are not discussed, they are an integral part of the system, such that at least the vacuum lines to the source would have been expected to be effected as taught, along with the ion source. Common sense says, that the opening and closing of the system/chamber/source is when the system is equilibrated to atmospheric pressure (hard to open seals when suction is keeping them closed). While Bunker is concerned with limiting contamination from ^{32}P, this radioactive P has the same chemistry as non-radioactive phosphorous isotopes, hence the chemical effect of using inert gas in inherently the same with

respect to oxygen and inflammability in either case. Also, note that all systems that have contained air, will have hydrogen therein, as it is a component of air.

While Banker does not discuss any particular inert gases for use, such as the claimed Ar, any of the class of inert gases, He, Ne, Ar, Kr, Xe or Rn may be considered suggested, such that it would have been obvious for one of ordinary skill in the art to employ any of the taught class of gases, with the further consideration that Ar is one of the most commonly available and used for purging/flushing purposes.

4. Other art of interest includes Kuwabara et al (6,156,657), who discusses that flammable substances to be purged from a pump system require the use of inactive gas when purging (col.3, lines 1-7), which is cumulative to the suggested use of inert gas by Bunker. Rzeszut et al (6,515,290 B1) in col. 7-9, discusses the use of inert gas in the gas delivery system for ion implanters, to purge the gas lines and for leaks in the system. Ahmad et al (5,427,983) in the paragraph bridging col.3-4, notes that after processing a chamber is vented with dry N_2 gas when let up to atmospheric pressure, demonstrating common use of such procedures, especially where any reason for reactivity of materials in the chamber being let up to atmospheric may be a concern. Kinoyama (2003/0218429A1), which is not prior art, concerns ion source operating systems, including a "purge mode" ([0024] and [0054-60]).

5. Applicant's arguments with respect to claims 8-10 have been considered but are moot in view of the new ground(s) of rejection.

6. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

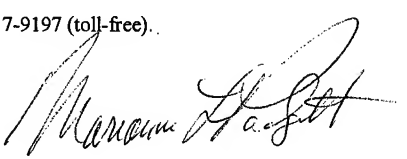
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marianne Padgett whose telephone number is (571) 272-1425. The examiner can normally be reached on M-F from about 8:30 a.m. to 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Beck Shrive, can be reached on 571-272-1415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Padgett/tgd May 27, 2004 & June 12, 2004



MARIANNE PADGETT
PRIMARY EXAMINER